IV. MITIGATING MEASURES INCLUDED IN THE PROPOSED ACTION

A. MITIGATION OF IMPACTS ON NATURAL AND CULTURAL RESOURCES

To continue human use of the river corridor Will cause resource impacts. Under the existing use levels of 96,600 user days (commercial passengers and noncommercial participants), irreversible impacts are being inflicted on the natural and cultural resources of the Inner Canyon area. The proposed action allows for an increase to 175,950 user days annually. (This figure does not include crew user days.)

Although the research findings demonstrate no clear correlation with absolute numbers of visitors and the rate and magnitude of resource damage, it is evident that unless the resource impacts are mitigated, an increase in the total user days would lead to an acceleration of the adverse impacts.

The direct measures included in the proposed action to alleviate this human impact on the natural and cultural resources are presented below.

Reduce Congestion at Attraction Sites: Congestion of visitors at attraction sites has been found to be a principal cause of resource impact. Too many people in an area at the same time accelerates impacts on resources. Limiting to 65 the maximum number of river runners that may launch daily at Lees Ferry will mitigate these potential impacts.

Impacts resulting from congestion will also be mitigated by more uniform rates of travel along the river. Full-length summer trips currently vary from 6 to 18 days. Under the proposal the majority of summer trips will vary from 8 to 18 days. This should reduce the potential for trips to overlap at attraction sites by about 25 percent.

Reduced Congestion On The River: The conversion of all the boats on the river to oars will increase the number of watercraft on the river. The reason for this is that the average oar boat holds less passengers than does the average motor craft. The factor contributing most to the visitors' perception of crowding is the numbers of trips they see on the river and not the number of boats they see. The increased boats will be in the visitors' own party and the perception of crowding should not increase. The overall contacts on the river between different groups will decrease from the current average level, thus maintaining or improving the visitors' experience. These contacts will be mitigated by the reduced launches at Lees Ferry and the spreading out of use over the season.

Establish Trail Systems at Attraction Sites: There are several attraction sites and side canyons along the Colorado River where multiple trail systems have evolved. The impacts that result include vegetation trampling, destruction of cultural resources and increased rates of erosion. These impacts will be minimized by constructing and maintaining trails.

In most cases an existing trail will be designated and made obvious. New trail construction will be minimal, generally limited to short sections of an existing trail. Topography, slope, unstable soils, and appropriate access will be analyzed before trails are developed. Special care will be taken to avoid visually obtrusive alignments. Each trail alignment will be designed to avoid unsightly cut and fill excessive erosion, and impact on cultural resources. All alignments will be cleared by an archeologist prior to construction and will be altered to avoid impact or disturbance of cultural resources.

Restrict Use Of Unique Resource and/or Ecologically And Culturally Sensitive Areas: Because of their unique features and/or sensitivity, the restricted areas shown on the maps on pages 1-4 - 6, will be closed to visitation and/or camping. Other areas or sites, including those proposed for archeological or historical evaluation and the ecologically sensitive areas, will be subject to closure or restriction should monitoring show unacceptable impact resulting from visitor use. Camping beaches may be closed on a rotational basis if resource impacts are not significantly reduced under the proposed actions.

Carry out Solid Human Waste: Human fecal and related wastes will be carried out of the canyon. This action has already been implemented successfully in 1978, resulting in significant improvement in the condition of beaches.

Cans, rubbish, wet garbage, cooking greases, and other refuse of any kind may not be discarded in the canyon. All refuse must be carried out of the canyon and placed in an acceptable disposal area. Any solids such as coffee grounds or food particles from dishwater must be strained and put in garbage containers before such liquid wastes are drained into the main river current. No waste liquids may be dumped on beaches or in eddy currents.

Restrict Soaps and Detergents: The use of detergents, soaps or any other form of cleansing agent is specifically prohibited in any side stream or spring or within 100 yards upstream or downstream of any live side stream. The use of soap is restricted to the Colorado River and low phosphate soap is required by 40 CFR, Section 120. It is the responsibility of the commercial guide or the noncommercial trip leader to ensure that members of his or her group follow the National Park Service guidelines on resource protection. It is the responsibility of the National Park Service that these guidelines are clearly and precisely stated and that each guide/trip leader is well versed in these regulations. These guidelines will have no protective import if they are not adequately communicated to the user.

Educate Guides, Trip Leaders and Visitors: Commercial guides and noncommercial trip leaders will be trained in minimum impact techniques and practices. The National Park Service will provide:

Copies of the operating requirements to every guide and trip leader prior to launching.

Audiovisual education programs on minimum impact practices to all commercial and noncommercial passengers prior to departure.

Guide/trip leader training programs in resource protection/safety/ sanitation/interpretation. The importance and necessity of a program of this design has been stressed by various research investigators (Johnson, 1977). This program will be the framework for a future guide/trip leader licensing program. Training sessions for commercial operators held twice yearly, spring and fall, for five days each, will include instruction on resource protection, review of operating requirements, safety and sanitation procedures, first aid and rescue, and natural history interpretation.

Increase National Park Service Patrols of the River Corridor: National Park Service patrols of the river corridor are imperative. Patrol duties include interpretation, first aid, rescue, trail patrol and maintenance, and enforcement of regulations. Approximately two patrol trips each month will be made from April 1 to September 30 and one trip each month the remaining months.

B. MITIGATION OF IMPACTS ON SOCIOECONOMIC FACTORS

Accommodate visitors who desire a shorter, less expensive Grand Canyon River trip: Commercial trip concessioners will be encouraged to provide partial canyon trips to and from various locations along the river corridor. The primary partial trip ingress and egress location is expected to be Phantom Ranch. Egress at Lava Falls and Whitmore Wash is expected to increase. The primary mode of access to and from Phantom Ranch is by foot, but arrangements can be made for mule transport. Mule and/or horse transport in and out of the Canyon will also be available at Whitmore Wash, for those who desire this type of service. Helicopter takeouts in the Lava Falls area will likely continue. Helicopter services will operate outside the park boundary. Location and timing will be arranged with concessioners and owners of the adjacent lands being used for this purpose, to minimize helicopter impact on other river runners and canyon visitors.

Partial river trips will provide the opportunity for less expensive river trips for those who want them.

The provision of trips beginning at Phantom Ranch will also allow concessioners to increase the numbers of passengers taken down the river in a year. This will mitigate the impacts of the reduced commercial passenger launch from Lees Ferry during the midsummer months.

Motorized River Trips Provided On Other Western Whitewater Rivers:
Motorized whitewater river trips are currently available on other sections of the Colorado River system, as well as on other western whitewater rivers. Sections of the Colorado River and its tributaries on which motorized trips are available include Cataract Canyon (4 to 5 days), Desolation-Gray Canyon on the Green River (4 to 5 days), Westwater Canyon (1 to 2 days), San Juan River (3 to 5 days). It cannot be guaranteed that motorized trips will remain on all these whitewater river sections; however, draft river management plans are published for Cataract Canyon and Desolation-Gray Canyon that indicate motorized craft will be allowed to continue. Thus, shorter motorized trips are available within the region.

Continue Health and Safety Standards: Health and safety standards have been designed to reduce accidents, injuries, and health hazards. Continuing emphasis will be placed on adhering to these standards to further reduce incidents. (See Appendix C)

Commercial concessioners will be required to comply with the Health and Sanitation Section of the annual operating requirements.

Assess the River Management Plan: This plan will be assessed annually to evaluate the adequacy of launching schedules in relation to contact, crowding, and resource impact, to determine whether or not an equitable distribution of user days is being achieved; to determine if total numbers of people are within the resource capabilities of the river system; and to determine adjustments, if needed, in user days, types of trips, and service to the public.

Phase Out Motorized Trips: To mitigate economic impacts on motorized trip concessioners, motors will be phased out over a 5-year period. During this 5-year period a minimum of 50 percent of the summer season will be allocated to both motorized and non-motorized travel. This will allow concessioners to phase out the use of their motorized craft, amortize them, and train guides in the operation of oar-powered craft.

C. MONITORING AND RESEARCH REQUIRED

Present research projects on the Colorado River have delineated the status of the river system, as well as providing information on possible future biological and sociological trends. The physical and biotic

inventories have aided in pointing out areas in which future research and monitoring is desirable. Future research and monitoring will be instrumental in indicating the ecological responses brought about by changing management procedures or environmental conditions, as well as needs to monitor visitor satisfaction and shifting demands of interest groups and economic changes.

The monitoring of sociological trends regarding contacts, crowding, and, particularly, relative demand for commercial and noncommercial river trips is essential. The proposed action significantly modifies use patterns Contact and crowding data provided from recent research was based on current use levels and patterns. Therefore, as this plan is implemented, there will be a critical need to monitor use patterns under changed conditions.

Also, there is very intense concern about the relative demand for commercial trips versus noncommercial trips. This is evidenced by two law suits that have been filed and are still pending (Wilderness Public Rights Funds vs. Kleppe et al. 1976; and Eiseman et al. vs. Andrus et al., 1977). Additional research is needed to aid in determining the relative demand. Monitoring of demand fluctuations is needed as well.

The various research projects have determined that severe impact is being inflicted on the natural system of the Colorado River corridor. These impacts will be alleviated, for the most part, by the mitigating measures that are included in the proposed action. However, the resource monitoring program must be continued to detect deterioration in the resource. The resource alterations that will or could take place over a period of sustained use (15 to 20 years) are unknown and can only be determined by careful continued monitoring of the system.

Of highest priority is a monitoring program that is designed to provide an annual assessment of the environmental health of the campsites. This program will consist largely of study areas consolidated in a single series of research sites along the river. These areas will have a high biotic resource rating, thus lending themselves to multidisciplinary investigations of fishes, terrestrial vertebrates, water quality, algae, vascular plants, beach erosion, etc. This would have the advantage of providing reasonably complete biological information on several areas as they undergo changes, enabling analysis of the complete system rather than individual aspects.

A great need exists for additional baseline data concerning the physical substrate. This would be provided by high resolution vertical color aerial photography. Field surveying in geomorphological, macrofloral and human impact studies is essential to establish detailed calibration data to correlate with photographic information. Aerial photography should be reflown at least once between 1980 and 1985 to provide a

documentation of all major changes taking place along the river. Resurvey of all beach profiles on the benchmark beaches should be undertaken sometime in the period of 1978 to 1981 to allow an accurate assessment of erosion and deposition rates.

Water quality monitoring will continue to assess any future changes in water quality in both the river and tributaries. This will provide human impact and habitat data regarding aquatic life, especially endangered fish species affected by alterations brought about by Glen Canyon Dam.

Further studies will be initiated to better define the relationships, both intra- and interspecific, of fish occurring in the region. This would include surveys of the river in addition to systematic surveys of selected tributaries and the collection of fish for analysis of food habits, general health and reproductive conditions. Benthic samples should be taken at each tributary to aid in identification of fish stomach contents, to help define key tributaries and to determine why they are utilized by certain fish. This will provide information concerning endangered fish species, particularly the genus Gila. Restoration of habitat is essential to the survival of Gila in the Grand Canyon area. Monitoring studies of both chub species should be carried on to determine population trends and spawning success.

D. COMPLIANCE WITH THE NATIONAL HISTORIC PRESERVATION ACT AND THE ENDANGERED SPECIES ACT

1. National Historic Preservation Act

All actions in the proposed plan will comply with the Procedures of the Advisory Council on Historic Preservation (36 CFR 800) and National Park Service historic preservation policies.

In compliance with Executive Order 11593, a complete cultural resource inventory has been undertaken (Euler, 1978). Both pre-historic and historic sites will be evaluated for significance and those meeting the criteria will be nominated to the National Register of Historic Places in consultation with the Arizona State Historic Preservation Officer.

Repair or stabilization of cultural sites will be accomplished in accordance with Historic Structures Handbook, Part II, Ruins Stabilization, the National Park Service Administrative Policies (1978), the Act to Provide for the Preservation of Historic American Sites (49 Stat. 666), and the Act for Preservation of American Antiquities (34 Stat.
225).

The Advisory Council on Historic Preservation and the State Historic Preservation Officer have commented on the plan actions. Their comments are incorporated in Section IX. D.l. of this statement.

2. The Endangered Species Act

In compliance with the Endangered Species Act, measures are being initiated to protect the endangered humpback chub. The mitigating measures necessary to protect this species include continued enforcement of the existing regulations regarding the use of detergents in side streams, and closing this area to angling and seining. To effect maximum protection of this species, angling and seining has been prohibited for .5 miles above and below the confluence of the Little Colorado River and the Colorado and all of the Little Colorado River above the confluence, within the park.

The bonytail chub is believed to be decreasing in numbers and is currently being considered for status as a threatened species. The National Park Service has contacted the Fish and Wildlife Service and has completed the consultation process under Sec. 7 of the Endangered Species Act. Their evaluations are included in Section IX. D.l. of this document.

V. ANY ADVERSE IMPACTS THAT CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

The total number of river runners that annually traverse the canyon will increase by approximately 2,000 persons (from 11,730 to 13,455). The plan will result in an estimated 79,680 additional user days (from 96,600 to 175,950; crew, research and patrol trips not included). Although mitigation of resource impacts resulting from visitor use patterns is provided for in the proposed action, accommodating visitors in the system at all results in a certain amount of unavoidable resource impact. Foot traffic on beaches, side canyons, and attraction sites will continue to accelerate soil erosion and impact vegetation.

Minor soil and vegetation impacts will occur during the winter season due to driftwood collection and wood fires. Trail construction will result in short-term minor erosion until the affected areas are naturally stabilized.

Normal visitation to cultural sites will result in minor, but unavoidable deterioration. Vandalism or carelessness will also remain as potential unavoidable impacts.

An unavoidable adverse impact resulting from the proposed removal of motors will be that those persons favoring the use of motorboats will be disappointed. The loss of a fast, motorized trip from Lees Ferry to Diamond Creek cannot be completely mitigated.

There will be a slight shift in the overall visitor characteristics of the river-running population due to the greater allocation proposed for noncommercial river runners.

The elimination of all wood fires, except for esthetic purposes or supplemental cooking during the high use period, will result in impacts that cannot be avoided. All wood for summer season fires must be carried in and ashes carried out, causing the user to suffer some inconvenience. The use of wood for esthetic fires and charcoal briquets for cooking and use of driftwood for fires during winter will continue to be a small source of unavoidable beach pollution in that ashes will be occasionally incorporated into the beach soils due to spillage from fire pans.

Human waste carry out systems are set up at camp sites but are not set up during the day at attraction sites. As a result, there will be the unavoidable impact of a small amount of human body waste accumulation at attraction sites. Further work on method and equipment to resolve this problem is underway.

Approximately 3,000 persons will be adversely affected during the months of June, July, and August due to fewer trip launches and lower authorized

passenger departures. Rescheduling of trip launches from weekends to mid-week periods will require some people to adjust vacation schedules during the summer season. This is an unavoidable impact necessary to mitigate impacts of crowding and congestion caused by past heavy weekend launches.

Inconvenience due to time spent meeting specific regulations or attending an orientation program may prove adverse for some noncommercial river runners. Trip leaders will have to commit an extra day for training and orientation before running the river.

The noise from helicopters taking out passengers from river trips will be an unavoidable impact.

VI. THE RELATIONSHIP BETWEEN LOCAL, SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The unique combination of scenic, biotic, geological, archeological, and historic values within the river corridor of Grand Canyon will be perpetuated over the long term. However, use by 13,455 people each year will unavoidably alter or disrupt some elements of the riverine environment. Even though the process of natural biotic response to unnatural change has occurred within the riverine environment due to Glen Canyon Dam, human use should not adversely accelerate the process nor impair the new systems to the point of decreased productivity. Erosional forces of the river and other natural processes are intensified by human activities, such as camping and hiking. Short-term visitor enjoyment must be weighed against the relatively long-term adverse effects of use on the river environment.

Increased use proposed by the plan will continue to cause erosion and vegetative disturbance in some beach areas (250 acres). The removal of human wastes, kitchen debris, and ash and charcoal from the canyon will enhance the beach environment over the long term.

Multiple trailing at prime attraction and side canyon sites will be reduced. The proposal to construct or designate trails to prime sites will reduce high impacts such as compaction, gullying, and erosion. Approximately 5,000 acres will be maintained and enhanced over the long term. However, short-term visitor use and activities will continue to cause soil disturbance and some inadvertent loss of cultural materials, but the overall health of the ecosystems and the integrity of cultural resources are expected to be maintained.

Short-term adverse effects will be experienced by both the river-running public and the commercial operators. Restrictions, rules, regulations, and requirements are the adjustments that must be accepted if use is to be increased and a quality wilderness experience maintained. Rules, restrictions, and regulations may also be considered adverse over the long term. An added burden will be placed on managers, operators, and visitors alike. Some visitors resent regulations and feel they should not be restricted in any way.

However, the required training, orientation and minimum impact regulations will provide both immediate and long-term benefits. The prohibition of human waste burial in beach sands will remove both esthetic and environmental disturbance. The elimination of wood fires during the summer season will disappoint many river travelers, but the restriction mitigates the impact of dwindling supplies of driftwood in the river corridor. The natural and cultural resource impacts associated with this overuse will be significantly reduced. Both short-term and long-term resource protection gains are realized. Orienting river runners in minimum impact techniques will benefit the canyon environment in the long term.

Visitors may not always be able to run the river at times they prefer. Scheduling may become a short-term inconvenience. Regulation of river trips to achieve less contact and prevent congestion within the river corridor will allow more users to experience the canyon under conditions approaching wilderness solitude. Short-term visitor inconveniences were weighed against the short- and long-term benefits of maintaining a high quality river trip experience.

The elimination of motorized craft will disappoint and inconvenience a relatively small percentage of visitors and operators who prefer short, fast, river trips through the canyon. This loss was balanced against the higher quality oar trip experience that could be provided for the majority of present river users and perpetuated for future generations. The preservation of this quality experience seems imperative as the availability of "wilderness areas" dwindles before the demands of an expanding population.

The long-term productivity of the canyon in terms of maintaining environmental quality, social appreciation, and enjoyment of the visitor will be enhanced by the plan actions.

VII. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

The proposals in the Colorado River Management Plan result in few irrevocable effects on the canyon's resources. The plan actions and the proposed mitigating measures are designed to lessen current detrimental trends and keep resource impacts at an acceptable level.

Any use of the resource will result in some loss of soils and vegetation in beach areas and at attraction sites. The proposed actions include the building of trails to minimize this impact; ironically, the trails themselves are commitments of the landscape over the long term. However, the area committed to random access will be reduced by approximately 5,000 acres by the plan.

Some loss of archeological and historical materials will occur due to visitor use, but if ruins are monitored, protected and stabilized this impact should be minimal.

There are no natural or cultural resources irreversibly or irretrievably committed to destruction or consumptive use by this proposal. There are no actions in the plan that would cause direct loss of historic or archeological sites, the elimination of wildlife habitat, or impairment of any threatened or endangered species.

VIII. ALTERNATIVES TO THE PROPOSED ACTION

A. NO ACTION (STATUS QUO)

Under the no action alternative, total use would be approximately 13,000 to 14,000 persons per year or 122,600 user days. This would include 89,000 commercial, 7,600 noncommercial, 25,000 crew, and 1,000 administrative user days. Length of trip would range from 7 to an unlimited number of days. Persons launched each day from Lees Ferry would continue to be 150 and higher, with up to 15 noncommercial passengers each day.

Use of motors would continue to be left to the discretion of each commercial operator or noncommercial river runner.

Allocation of use between commercial and noncommercial parties would remain 92 and 8 percent, respectively, and allocations among commercial concessioners would remain the same.

Subsequent to publishing the draft environmental statement, the requirement for human waste haul out and changes in requirements or use of fires have been implemented. These changes now represent the status quo. The changes have essentially mitigated the problems previously associated with human waste disposal and use of fires. Current regulations would continue to be in effect, except that patrols would be increased to monitor natural and cultural resources.

1. Impacts on Natural Resources

Irreversible physical and ecological changes would continue to occur in the riparian zones of the river corridor as a result of present visitor use patterns and activities. Soils and vegetation at beach and attraction sites would receive heavy impact from visitor congestion and trampling and clearing of vegetation. Twenty-five percent of the beaches suitable for camping areas (250 acres) would continue to receive heavy impact from camping.

Existing resource impacts are discussed in Section II. M. The following recapitulation of research findings indicates the kinds of resource impacts that can be expected to continue under this alternative:

> The physically and biologically fragile desert ecosystem cannot withstand the current uncontrolled patterns of off-river use. Therefore, the present chaotic patterns of foot traffic to side canyons, attraction sites, and beach terraces must be controlled (Carothers and Aitchison, 1976).
>
> The interrelationship between trampling, impacted vegetation and aeolian erosion is evident at attraction sites and some heavily used camps (Carothers and Aitchison, 1976; Howard and Dolan, 1976).

The impact associated with multiple trails changes the plant community structure in the immediate vicinity of the trail (Carothers and Aitchison, 1976).

2. Impacts on Cultural Resources

Visitor congestion at archeological or historical attraction sites would continue to cause deterioration due to uncontrolled foot traffic, dislocation of cultural materials, and heavy use. Increased patrols, protective devices, educational programs or prohibiting visitation to most of these areas could prevent further resource deterioration in compliance with Executive Order 11593.

3. Socioeconomic Factors

The impact on the visitor under the no action alternative would be moderately beneficial for most commercial passengers, but adverse for noncommercial river runners in that use allocations for the two groups would remain at the present ratio.

Generally, most visitors are satisfied with their Grand Canyon river trip. Opportunities for the majority would remain the same under the status quo. However the character of the river trip and the quality of the experience would continue to be impaired for some and certainly not improved for the majority under the no action alternative Motor noise, high contact levels, crowding at attraction sites, inadequate interpretation and education, and unsatisfactory esthetic conditions would persist. The following research conclusions are indicative of continuing and future effects:

The present use patterns of the river result in visitor satisfaction, with 85 percent of the visitors' rating their experience as "excellent" or "perfect" (Shelby and Nielsen, 1976).

The research findings show that the highest quality wilderness river experience is attained on non-motorized craft (Shelby and Nielsen, 1976; Thompson et al., 1975).

Most river travelers (80 percent) accompany large groups on motorized trips. Boatmen on these trips are less accessible either generally or for specific information (Shelby and Nielsen, 1976).

On motorized craft, pilot to passenger communication is possible, but the reverse is difficult or impossible when the motor is operating (Thompson et al., 1974).

Motor noise is detrimental to normal relaxed conversation and frequently affects interpretation of park resources (Thompson et al., 1974; Shelby and Nielsen, 1976; NPS).

Passengers on motorized trips are almost entirely denied the aural dimension of a wilderness during their on-river exposure to the resource (Borden, 1976).

Significant temporary hearing losses occur for pilots and some passengers on motorized craft (Thompson et al., 1974).

Oar trip passengers knew more names of places and features in the canyon than did motor trip passengers. There were no differences between the motor and oar passengers, however, in the percent who carried guide books or the number of books and articles they read about the canyon (Shelby and Nielsen, 1976).

A typical trip during the 1975 or 1976 season met between 3 and 4 other trips on the river each day and spent about 40 minutes per day in sight of them. The number of people on the trips seen each day amounted to about 70 people (Shelby and Nielsen, 1976).

A majority of users, 57 percent, said they would rather run the river with a small (20 persons or less) party (Shelby and Nielsen, 1976).

It can be assumed from the above that motor noise, large party sizes, and high contact levels would continue to affect a majority of the visitors. Eighty percent of those running the river would have a significantly reduced opportunity for interpretive and educational experiences due to motor noise and the size of the group. On the other hand, oar passengers (20 percent) seeking the wilderness-type trip would continue to be affected by noise intrusions, crowding, and high on- and off-river contacts. Education/interpretation programs would be unavailable to noncommercial river guides and passengers under this alternative.

Under the status quo management of the river, no significant adverse economic impact is anticipated.

The river trip concessions in Grand Canyon National Park represent a multimillion dollar industry. Most float trip concessions are earning healthy profits. This situation is expected to continue. Although the profitability of a concession is not significantly related to size (in sale of user days) of river trip concessions, the larger companies have a greater potential to maintain economic stability than do the smaller companies. The concessioner allocations would remain the same; therefore, some small companies that might require additional user days to remain economically viable would be adversely affected under the no action alternative.

B. INCREASE THE VISITOR USE LEVEL

This alternative would increase the visitor use level to the absolute physical carrying capacity of the system. It is important to emphasize, however, that the quality of the visitor experience provided by this alternative is not as high as that anticipated under the proposed action.

The physical capacity of the river system is limited mainly by the availability of camp space within reasonable traveling distance each day. Reasonable spacing between groups is also a limiting factor. Within the above constraints and allowing for five groups per day to be launched (one group of 8, one of 20, and three groups of 40), the daily launch capacity would be 148. Assuming a 182-day season and 12 days to complete the trip, the annual capacity for this alternative is calculated as follows: 148 people/day x 182 days = 26,936 visitors per year x 11 user days per trip = 296,296 user days (Borden et al., 1976). Borden's study of carrying capacity uses 12 days as the basic trip length. However, since only 11 nights are spent in the canyon, he assumed that 11 user days are utilized on a standard trip, to arrive at total annual capacity of 296,296 user days. This is contrary to NPS assumption that a passenger day is counted for any passenger for any part of one day in the system and therefore capacity by this assumption is 323,232 user days, almost 2-1/2 times the present use level. Present use levels, however, appear to be moderate to high for a wilderness experience (Shelby and Nielsen, 1976).

Under a very tight scheduling system of launch days and times, campsite space assignments, structured river travel restrictions, time and area limitations at attraction sites, and a standardized trip length of 12 days, this alternative could increase the total visitor use level to approximately 27,000 visitors and the total number of user days to 323,232. This is an 85 percent increase in total visitors and a 242 percent increase in total number of user days over the status quo.

1. Impact on Natural and Cultural Resources

Section II. M. and the no action alternative address impacts on natural resources that are and will continue to result under current and use levels patterns. A pervading fact of the discussion on visitor related impacts is that the total number of visitors does not effect impacts as much as their activities and patterns of use.

By increasing the total use level by 85 percent, there will be no change in the kinds of impacts; however, the rate these impacts are inflicted on the resource is expected to increase, even with the mitigating measures in the proposed action, leading to an overall rapid deterioration of the natural resources. With this magnitude of use, crowding and

congestion will increase resulting in increased resource impacts. Unless campsite assignments were made, especially in the bottleneck areas of the canyon, overloading of camps would occur. The Park Service would have to increase staffing several times over to handle the noncommercial permit processing, commercial trip scheduling and evaluation, patrols, information and education programs, and monitoring.

This alternative would also increase visitation of the cultural sites in the canyon, unless limitations were placed on site visitation. Increased visitation would accelerate the rate of deterioration of these resources and, without mitigation, could result in the loss of nonrenewable resources.

Without intensive mitigation of the impacts associated with disposal of wastes, this alternative would increase the deterioration of the environmental and esthetic quality of the riparian corridor, as well as creating a greater potential for serious health hazards.

2. Impact on the Visitor

The visitor would be affected by trip length, strict regimentation, and amount of time allowed off river.

The length of both the private and commercial trips would be affected. Only 12-day trips would be possible. Currently, commercial trips average 8.7 days in length and noncommercial trips average 17.5 days in length. This would affect both the noncommercial and commercial river runners maximum and minimum trip length and significantly reduce options for trip variety and experiences. The option of taking 6-day trips to or from Phantom Ranch would continue to offer the visitor a river-running experience in a short period.

Under this alternative strict scheduling would be employed to reduce on and off-river contacts. At this level of use with outlined travel constraints, contacts would be at or above current numbers. Trips would be staggered to allow an average of 1.5 to 3 miles between. However, trips would overlap resulting in contacts, as they stopped at different places along the river. Selection of this alternative would also require regimentation and scheduling of all aspects of the visitor experience in order to provide for resource protection.

Due to the scheduling necessary to accommodate the increased number of visitors, off-river use would be limited to no more than 3 to 4 hours at a time. This alternative would eliminate virtually all overnight off-river camping. Ultimately, more off-river use would be concentrated at the attraction sites that are easily and quickly available from the river. Regimentation, scheduling and lack of options would detract from the quality of the visitor's experience.

This alternative would increase the need for interpretation and education of the visitor in minimum impact techniques. Some of the resource impact caused by increased use could be mitigated by teaching the visitor minimum impact techniques. In addition, the standard trip length of 12 days would increase interpretive services.

3. Economic Factors

Economic effects, under this alternative, would be beneficial to concessioners.

The river-running industry makes up such a small part of the local and regional economies that increasing the total use levels by 85 percent would not have a significant impact on these economies. The only exception to this would be Kane County, Utah, where the industry makes up a sufficiently important part of the local economy that such an increase would have a noticeable effect.

The river-running industry employs a limited number of full-time people. The majority of guides are seasonal due to the seasonal nature of the business. Most of the current concessioners could accommodate an increase in use by simply extending their running season with existing equipment and personnel. Significant additional employment, however, is possible under this alternative.

This increase in visitor use levels would have a considerable effect on park management. A detailed schedule of launch dates and times would have to be developed. An intricate scheduling of campsite assignments and times at camps and attraction sites would be necessary. All river runners, including commercial, noncommercial, and administrative trips would have to be intensively scheduled. This would require additional manpower and time, planning both pre-season and during the season for education and training. Additional patrols would be necessary to ensure that assigned campsites are being used at the right location by the correct party, requiring additional personnel and river-running equipment.

In summary, impacts on natural and cultural resources would increase. A greater number of visitors would be accommodated in the river corridor, but options would be severely limited and the river-running wilderness experience degraded due to regimentation and strict scheduling. Economic benefits would be accrued to the concessioners, but costs would increase considerably for park management.

C. REDUCE VISITOR USE LEVEL BY APPROXIMATELY 50 PERCENT

Reducing the use levels by 50 percent would result in a total of approximately 55,000 annual user days and, under patterns of current use, approximately 7,000 visitors. The 55,000 user day level is the original

use level as proposed in the final environmental statement of the 1973 wilderness recommendation for the Grand Canyon Complex. This proposal was not adopted due to the Grand Canyon Enlargement Act and restudy of the proposed wilderness areas.

1. Impacts on Natural and Cultural Resources

With a SO-percent reduction in user days and total visitors, the rate of irreversible impacts may slow down, but the simple reduction in visitor use levels will not affect the magnitude of change nor stop impacts on the natural resources.

Off-river hikes to side canyons and other areas of historical, archeological, and scenic interest are an integral part of the river trip experience. A reduction in visitor use levels would not necessarily change the existing patterns of off-river use for the visitors. Again, patterns of use are more impacting than actual use levels.

The present impact on the cultural resources results from vandalism and direct visitation to the historical and archeological resources of the Inner Canyon that are neither stabilized nor protected. Reducing the visitor use levels by 50 percent will possibly slow down the rate of deterioration, but will not affect the magnitude of change nor solve or stop the problems of visitor-related impacts.

If, however, the reduction of visitor levels under this alternative were combined with the protective, regulatory and scheduling actions described in the proposal, natural and cultural resource impacts would be reduced far below those anticipated under the proposed plan. The natural purging capacity of the river system probably would not be exceeded and the potential for natural restoration would be greatest under this action.

2. Impacts on the Visitor

The major adverse impact of this alternative is the reduction in the number of persons who could experience a river trip through the canyon. Approximately 7,000 persons per year would be denied the opportunity to visit a unique canyon wilderness; and the non-commercial visitor, under present allotments, would be severely restricted.

The issue of crowding as used in this document, partially reflects the ability of the visitor to perceive his or her experience along the Colorado River as a wilderness or recreation experience. The parameters that will affect the visitor 5 perception of the experience are as follows: (1) frequency of on-river encounters with other groups; (2) frequency of encounters at attraction sites; and (3) frequency of encounters at camping areas, mode of travel, and length of stay. At present use levels, 91 percent of the river runners define their river

trip as a wilderness experience (Shelby and Nielsen, 1976). Reducing the visitor use level by 50 percent would simply improve upon a situation that is generally satisfying. But such a reduction of user day levels will not, by itself, necessarily improve the character of the river trip or the quality of the wilderness river-running experience.

At present use levels, interpretation of the natural resources has been evaluated as less than desirable (Thompson, et al., 1975; Shelby and Nielsen, 1976). Reasons given for the "less than desirable" rating for current interpretive practices are (1) motor noise, (2) length of trip and (3) size of group. Reducing the current visitor use level by 50 percent would have no effect on the above items and thus have no effect on changing the interpretive experience of the visitor.

Substandard quality experiences that now result from visitor use patterns and activities can be mitigated by a combination of revised river-running regulations and/or education programs and scheduling, as well as conversion to oar-powered travel. The 7,000 persons who would be afforded the opportunity to run the river under this modified alternative would then have the fewest contacts, little or no esthetic intrusions, and a purer wilderness experience.

3. Economic Factors

Depending upon how allocation of this reduced use was made, especially among commercial concessioners, it could conceivably eliminate up to half or more of the existing 22 companies. Obviously this would cause financial hardship to those companies that are eliminated.

However, mergers or combinations could enable them to survive in a new form. The primary issue with 50 percent reduction is whether prices would increase. The cost of a trip would probably go up by as much as 30 to 40 percent, even 100 percent to clear the market. From data presented by Parent, 1976, it is hypothesized that the reduced level of use and a shift to higher priced trips (reduced commodity) would, therefore, narrow the availability of trips to visitors with higher income.

Employment would be affected to a moderate degree since there are currently about 200 river guides. The reduction of visitor use levels by 50 percent would result in fewer than 100 part-time jobs being lost.

Management of the river corridor under this alternative would be less costly than under the proposed action. Staffing needs would be reduced due to reduced river patrols and educational services. Informing passengers and guides of river-running procedures and regulations would be easier and less costly.

In summary, a simple reduction in visitor numbers would not necessarily improve existing environmental conditions, nor improve the quality of the visitor experience. Combining reduced visitor use levels with trip scheduling, resource protection requirements, and the elimination of motors would benefit both the visitor experience and the resources of the river corridor. However, a significant number of persons would be denied the river-running experience and approximately half of the concessioners would suffer economic hardships.

D. PROVIDE EXCLUSIVE PERIODS (JANUARY 1 THROUGH JUNE 30) FOR NON-MOTORIZED USE

This alternative would provide periods of time when only oar-powered trips would be available to all river runners traversing the canyon. During the periods wherein motorized use was allowed, the status quo would be maintained. The period of use split from January 1 to June 30, with a 10-day transition period from motors to non-motors, would result in a 50-50 user day split at present use levels.

1. Impacts on Natural and Cultural Resources

Natural or cultural resources would not be affected to any significant extent by this alternative. Oar trips, due to less variable speeds and fewer people could, however, serve to lessen crowding and congestion at attraction sites and, thereby, reduce resource impacts during the first half of the year. Scheduling of daily and weekly trip launches, similar to that of the proposal, as well as waste disposal regulations would have to be implemented.

2. Socioeconomic Factors

The effects on the visitor would vary depending upon the season of choice. During the motorized periods, this alternative would maintain the status quo in terms of a variety of trip lengths (5 days to 18 days). During the non-motorized periods, the short 5-day trip through the entire river corridor would not be available.

It has been demonstrated that non-motorized trips are esthetically more pleasing to the park visitor. This alternative would provide half the year with maximized esthetic satisfaction. During the period in which motorized craft were allowed, the lower quality esthetic potential (Status quo) would be maintained.

This alternative would probably have the greatest effect upon the commercial operator and the consumer. The January 1 to June 30 season could cause firms to invest in two types of equipment--oar and motor. The added investment could adversely affect profitability and increase the price to the consumer.

The impact of this alternative on the park management would be to require additional on-river monitoring to ensure that the motorized/ non-motorized periods of use were being maintained.

E. ELIMINATE MOTORIZED USE IN THE LOWER GORGE FROM DIAMOND CREEK (MILE 225.6) TO GRAND WASH CLIFFS (MILE 277)

This alternative would remove all motorized traffic from Diamond Creek to Grand Wash Cliffs. Powerboating, including upriver runs in the Lower Gorge, would not be allowed.

1. Impacts on Natural and Cultural Resources

The elimination of motorized craft and subsequent reduction in the numbers of persons engaging in lake recreation will significantly reduce overall resource impacts. The vegetation in the riparian zone below Diamond Creek is primarily dense stands of exotic saltcedar on silt deposits which were laid down during the periods when the level of Lake Mead was substantially higher. Certain beach areas show extremely heavy impacts from visitor use and, generally, the problems of litter and waste disposal increase between Diamond Creek and Lake Mead. With a reduction in both recreational activities and relatively heavy visitor use, impacts on beach soil (erosion) and exotic vegetation (removal and trampling) will be minimal. A reduction in wood gathering, boat mooring, foot traffic, and deposition of fecal material and food scraps into the soils would occur. However, due to the fact that a completely unnatural habitat has replaced the native and ephemeral riparian vegetation in the lake zones, the reduction of use impacts may not be considered as important as improvement of the riparian zones above Diamond Creek.

The reduction in lake recreation activities would also serve to diminish disturbance to archeological and historic sites. Off-river use and camping are not major activities in the Lower Gorge at present. These activities would be further reduced, thereby, lessening impact on sites such as Bat Cave and Rampart Cave, as well as important archeological sites adjacent to the river and the lake.

2. Socioeconomic Factors

The elimination of motors would significantly reduce visitor options in the Lower Gorge area. A minimum of 12,000 visitors, other than river runners, would be affected. An estimated one-half of these visitors use powerboats to fish, either incidentally or primarily, in the Lower Gorge-Lake Mead area. Very few, if any, would continue to do so if motor boats were eliminated. The option of motorboat travel from Grand Wash Cliffs upstream into the park would be eliminated. There is no indication that any of the visitors currently traveling upstream would still make the trip if motors were eliminated. An additional portion of

the users who are continuing their river trip from Lees Ferry or who launched at Diamond Creek would not choose to travel by oar the 40 miles of lake backwater to Pierce Ferry. Total use could be reduced by as much as 75 percent in this zone under these restrictions.

The elimination of motors will change the characteristics of the visitor who participated in a recreational activity in the Lower Gorge section of the canyon. The people in this part of the canyon come for different experiences than the participants in the upper [225].6-mile river trip. Present visitors are primarily interested in water-based recreation, through the use of powerboats, and the scenery for short weekends or one-day visits. It can be assumed that these people would be replaced by a different socioeconomic group interested in a more natural, non-motorized experience and willing to spend the extra time necessary to travel the lake. It can also be assumed that use levels would drop if powerboats are eliminated.

The elimination of motors would increase the time necessary to float the river from Diamond Creek to Grand Wash Cliffs by at least 1 day. It would increase the time necessary to travel from Grand Wash Cliffs upriver to Separation Canyon from 2 to 3 hours to 2 to 3 days. The option of traveling the 40 miles of slackwater in a short period of time would be precluded for both river runners and lake recreationists.

Those visitors wishing to travel beyond Diamond Creek to Lake Mead can expect increased trip fees due to removal of motors from the Lower Gorge area. The cost of a commercial river trip taking out on Lake Mead could be increased as much as $35 to $70 to meet the increased cost of the extra day necessary to make the trip across the backwaters of Lake Mead.

Elimination of motors would also affect about 50 percent of the trips now launching from Lees Ferry that end their trip on Lake Mead. This includes several companies who at this time travel the upper 240 miles by oar or paddle boat and use motors to propel them from Separation Canyon to Pierce Ferry (Mile 280). These companies would have to end their trip at Diamond Creek or spend at least 1 day longer traveling the lake. This would mean an added expense to the company for additional wages to travel to Pierce Ferry or for the use of the Diamond Creek Road.

The Hualapai Tribe presently benefits from the operation of motorized float trips. Conversion from motor to oar will adversely affect their trips, all of which launch at Diamond Creek. The economy of the operation could be affected since at least one extra day would be needed to travel the backwater to Lake Mead by oar. The extra cost may discourage commercial passengers. The income of this commercial operation could be significantly reduced.

A positive economic effect, on the other hand, would probably occur at Diamond Creek. Removal of motors could potentially increase the revenues being paid to the Hualapai Tribe for the use of their road from Diamond Creek to Peach Springs because few companies would choose to spend the extra day on the lake and would take their boats out at Diamond Creek.

Some minor impact on the economy of the marinas on the east side of Lake Mead might occur. This would be due to the reduction in the purchasing of gasoline and other supplies for trips upriver.

F. ALLOCATION OPTIONS

None of the following options would result in environmental or cultural impacts significantly different from those discussed under the proposal in Section III. These options will, however, affect the river-running public to varying degrees.

1. Individual Application

This would provide that all persons or groups interested in a river trip would apply to the National Park Service for a river-running permit. Permittees would be selected by the National Park Service through a procedure such as a lottery or on a first-come, first-served basis. The successful applicants would then determine whether to book passage with a commercial concessioner or to purchase equipment and run the river as a noncommercial party.

At first glance, this appears to be a very fair method of allocation. This alternative is strongly proposed by many who are interested in noncommercial permits. The basic premise is that allocation would be set by the relative number of applications that come in from noncommercial applicants compared to those for commercial trips, thereby eliminating the need for the National Park Service to impose pre-set allocations.

This proposal while appearing to be more fair than current allocation methods may in fact result in being less equitable.

Commercial companies desire to maintain a sufficient number of user days to remain economically viable. Case studies have shown under very comparable situations that commercial companies artificially increase the number of applicants desiring concessioner guided trips through heavy advertising. Noncommercial applicants could not realistically compete with this sort of advertising and, therefore, would have less opportunity for a trip than persons applying for commercially guided trips.

A person or group desiring a commercially guided trip would not be assured of such a trip even if successful in obtaining a permit. There is no way to ensure that a commercial trip would be available on the

specific day and for the specific group size authorized by permit. Also, the specific type of trip, in terms of length, cost, type of boat, and other amenities may or may not be available.

Management of this system by the National Park Service would be very difficult. This is particularly so in reference to matching commercial trip permit holders with a trip.

Noncommercial applicants would have less opportunity for a river trip than commercial applicants and even less opportunity than under the present system. Commercial passengers who have obtained a permit could not be assured of a trip.

2. Equal Commercial Allocations

This option would provide an equal allotment of user days among the approved concessioners. If the number of concessioners remained at 21, this alternative would result in each concessioner receiving 4.76 percent of the total available user days, 5,526 user days or 18 trips per company. Therefore, some companies would have a smaller allotment than at present and others would receive an increase.

Not all companies would necessarily want as much use as would be available under this proposal. It is doubtful that the larger companies want to be reduced.

The variety of trip experiences available to the public would be reduced under this proposal as equal allocations are likely to result in stereotyped trips. This could result in narrowing the availability of trips to only a certain segment of the public.

3. Educational and Organized Group Allocation

This option would provide a special allocation of use to educational and other organized groups. Some of these groups believe they should have special standing due to their educational or social service attributes.

An exact definition of "educational trips" has never been established and, in fact, Shelby and Nielsen (1976) showed that all trips result in meaningful educational experiences.

The flow of money to trip organizations and leaders must be assessed, as many such organizations are commercial. By law and regulation, any commercial operation must obtain a commercial permit.

Educational and underprivileged youth groups have pressed for special allocations. They do not want to be considered as commercial even though some must be viewed as such due to their financial arrangements.

If educational and underprivileged youth groups are entitled to a special allocation, then any other organized group would have to be given equal opportunity. This could include religious, civic, Boy Scout, civil rights, conservation, and other organizations. In each instance of awarding special allocations for such groups, a determination of commercial or noncommercial status would have to be made and permits authorized accordingly.

Such an allocation would have a positive impact on those groups involved who would gain direct access to river trips. There appear to be more groups interested than could logically be permitted; therefore, selection of groups to gain permits would adversely affect those not selected.

Use allocation for the educational or organized groups would have to be taken from commercial and/or noncommercial allocations, thereby, adversely impacting those groups.

IX. CONSULTATION AND COORDINATION WITH OTHERS

A. CONSULTATION AND COORDINATION IN THE DEVELOPMENT OF THE PROPOSAL AND IN THE PREPARATION OF THE DRAFT ENVIRONMENTAL STATEMENT

1. Public Input

Public hearings on the preliminary wilderness proposal for lands within Grand Canyon began in May 1971. The most recent public review of a revised wilderness classification for the expanded park entailed both pre-planning public meetings in September and October 1975, and the distribution of the draft environmental statement (DES 76-28) in July 1976. The river corridor was an important issue during the 1971 hearings and the 1975 workshops, as well as in letters of comment responding to the draft statement. Over this 5-year period there was no significant fluctuation in public sentiment. Their input strongly favored the inclusion of the river and the surrounding land into a wilderness system, and included the elimination of motorized river craft, control of aircraft noise, and preservation of the canyon's natural ecosystems.

Six river management workshops were held in March 1976 in the following cities; Phoenix, Arizona; Grand Canyon, Arizona; Los Angeles, California; San Francisco, California; Salt Lake City, Utah; and Denver, Colorado. The workshops were attended by 365 participants. Over 100 clubs and organizations were represented as well as many concerned individuals. About 27 percent each came from Arizona, California, and Colorado; 14 percent from Utah; and 5 percent from eight other states. Ages of the participants ranged from 12 to 69, of which 43 percent were between 20 and 29, and another 23 percent were between 30 and 34.

The following is a list of issues raised and primary points of view taken in order of mentioning:

Allocation of Use. Most people were concerned with establishing a fair ratio or balance between private, commercial, and educational groups, basing it on demand figures. Most people recommended increasing private allocations.

Environment. Protection and conservation were the key words here. Issues included the necessity of fires, the impact of people on the environment, stopping aircraft flights over the canyon, sanitation, and maintaining the water quality in the canyon.

Motors vs. Oars. This concerned many people, and while views were mixed, the majority of input favored oar trips.

Permit Systems. Exactly how permits were to be issued brought varying responses. Some ideas were: issue all permits to individuals, then the permittee could decide whether to go privately or commercially, this was termed "hunting system;" keep the lottery system for private permittees as it is; do away with the lottery system and give priority to experienced private people.

Wilderness Designation. The majority were for designation of the river and surrounding areas into the wilderness system. The use of motors on boats in this designated wilderness was controversial. Some were for and some were against this use.

Disposal of Human Waste. If disposal of human waste is determined to be a health hazard, dumping stations and carrying waste out of the canyon was suggested.

Total Use. The ceiling on use was again controversial. Most agreed to limit use to protect the canyon and "wilderness experience." It was suggested that by encouraging off-season use, less overall feeling of crowding might occur, with even a possibility of increasing the overall use ceilings.

Commercial Use. Concern was expressed about the amount of commercial advertising. Many people were concerned that advertising may be creating an unnecessary demand. The desire was also voiced to increase boatman standards and interpretive programs.

Limitations. Smaller maximum limits on group size for commercial parties and longer minimum lengths for commercial parties were suggested. Equality of limits for private and commercial use was also discussed.

Regulations. More enforcement of existing regulations and education of all users, rather than establishing more regulations, seemed to be a consensus.

Dams. Some would like to get rid of the dams now on the river. Almost all were against additional dams.

Noncommercial Trips. Increased group size, the definition of noncommercial user, equipment criteria, criteria for noncommercial trip leaders, the necessity of support boats for kayaks, policy on equipment rental, and posting monetary bonds to insure compliance with rules were all discussed.

Education. A need for better and more interpretation and training programs was discussed.

Wildlife. Control of feral burros was a dominant concern. The protection of all other wildlife was also stressed.

Resource Monitoring. The establishment of a monitoring program was considered important to detect changes or problems as they occur.

2. Coordination With Other Organizations

Hualapai representatives meet regularly with park officials at river-running meetings held each year at Grand Canyon National Park. Close cooperation with the tribe is necessary since they maintain the only road access to the river between Lees Ferry and Pierce Ferry (Diamond Creek, Mile 225.6). Helicopter takeouts also operate from Hualapai Tribal land. The River Unit Manager met with the Hualapai Tribal Council at their regular monthly meeting in September of 1978, March of 1978, August of 1977, and August of 1976. At the annual fall meeting on October 16, 1978, the Hualapai Tribal Chairman was given time to discuss with river concessioners matters pertinent to takeouts at Diamond Creek. Routine telephone contact is made annually by the River Unit with the Hualapai to keep them informed of those river trips taking out at Diamond Creek and other related matters. Park officials will continue to maintain close relations with the Hualapai to ensure mutual understanding of the canyon and river-running procedures.

During the fall of 1975, park personnel met with the chairman, members of the Havasupai Planning Committee and the Bureau of Indian Affairs Planning Group. A workshop was also conducted by the Havasupai Tribal Council to discuss preliminary planning proposals for the Havasupai Land Use Plan. Discussions concerned backcountry use in the traditional use lands, trails crossing the reservation lands which may be needed by hikers to gain access to various portions of the national park, and a cooperative system for management of backcountry use in areas that border the Havasupai Reservation.

During the development of river policies, the concessioners have played an active role and have been contacted through several different avenues. Twice yearly, the Western River Guides Association meets, and representatives from Grand Canyon attend to include information on the current management of the Colorado River. Grand Canyon National Park sponsors an annual boatman training session to discuss operating requirements and to solicit ideas from those who run the river commercially. In March of 1978, a specific session was held to discuss the plan and river management.

The park also hosts an annual meeting, held in October, for all concessioners operating on the river. This year's meeting included discussions of the River Management Plan.

Other agencies have been involved in the process of developing river management. Grand Canyon Park Service representatives attend biannual meetings of the Interagency Whitewater Committee to gain insight into the river management situations confronting other Park Service areas,

the Bureau of Land Management, the U.S. Forest Service, the Coast Guard and other agencies involved in rivers with whitewater status.

3. Consultation During Development of the Plan

Individuals who were contacted in person or by telephone during the fall of 1976:

Biology and Ecology - Dr. Stephen Carothers, Museum of Northern Arizona provided direct input into the draft environmental statement.

Beach Erosion and Pollution - Dr. Robert Dolan, University of Virginia.

Economic Data - Dr. Michael Parent, Utah State University

Sociological Data - Dr. Joyce Nielsen and Dr. Bo Shelby, Human Ecology Research Service, Inc.

River Running Management - Middle Fork District Ranger, Challis National Forest, Forest Service, USDA

River Management Specialist, Utah State Office, Bureau of Land Management, USD1

Members of the Western River Guides Association. At the semiannual meetings of WRGA of 1976 and 1977, concessioners and other interested river runners were invited to provide input to the river management plan.

Members of the Sierra Club, Tucson, Arizona

Grand Canyon River Concessioners. At the annual fall concessioner meetings of 1976 and 1977, concessioners were encouraged to provide input to the development of the draft river management plan.

B. COORDINATION IN THE REVIEW OF THE DRAFT ENVIRONMENTAL STATEMENT

A copy of the Draft Environmental Statement (DES) was sent to each of the following for review and comment. Those who provided comment are indicated by an asterisk.

Advisory Council on Historic Preservation*
Department of Agriculture
U.S. Forest Service*
Department of the Interior
Bureau of Indian Affairs*
Bureau of Land Management*
Bureau of Outdoor Recreation*

Bureau of Reclamation*
United States Fish and Wildlife Service*
United States Geological Survey*
Department of Transportation
U.S. Coast Guard*
Federal Aviation Administration*
Environmental Protection Agency*
Arizona State Clearinghouse*
Arizona State Historic Preservation Officer*
Northern Arizona Council of Governments*
Havasupai Tribal Council
Hopi Tribal Council*
Hualapai Tribal Council*
Navajo Tribal Council

Others receiving informational copies of the draft include:

Coconino County Board of Supervisors*
Coconino County Planner and Director
Mohave County Planning and Zoning Commission
Cocopai Resource Conservation Development Project
City Manager, Kingman, Arizona
City Manager, Williams, Arizona
Mayor, Flagstaff, Arizona
Mayor, Kanab, Utah
Mayor, St. George, Utah
Arizona Academy of Science
Governor' 5 Commission on Arizona Environment
Aircraft Owners and Pilots Association
Arizona Conservation Council
Arizona Desert Bighorn Sheep Society, Inc.
Arizona Friends of the Earth*
Arizona Mountaineering Club
Arizona Parks and Recreation Association
Arizona Wilderness Coalition*
Arizona Wildlife Federation
Arizona Wildlife Society
Arizona-New Mexico Wildlife Society
Arizonans for Quality Environment
Citizens for a Best Environment
Colorado Plateau Environmental Advisory Board
Colorado River Wildlife Council
Conservation Foundation
Desert Protection Council
DNA-People’s Legal Services
Environmental Conscience Corporation
Federation of Western Outdoor Clubs*
Lord's Earth Committee
Maricopa Audubon Society

Michigan Botanical Club
Museum of Northern Arizona*
National Audubon Society*
National Parks and Conservation Association*
National Recreation and Parks Association*
National Wildlife Federation*
Nature Conservancy
Navajo Tribal Museum
Nevada Open Spaces Council
Saguaro Conservation and Ecology Club
S.A.V.E.
Save the Grand Canyon Committee
School of American Research
Sierra Club, Palo Verde Group*
Southern Arizona Hiking Club
Southern Nevada Resources Action Council
Tucson Environment Center
University of Colorado Environmental Center*
Wilderness Society*
American River Touring Association*
Arizona Cattle Growers Association
Arizona Daily Star
Arizona Daily Sun
Arizona Public Service Co.
Arizona River Runners, Inc.*
Babbitt Brothers Trading Co.
Canyon Food Mart
Canyon Squire Motel
Canyoneers, Inc.
Colorado River and Trail Expeditions, Inc.
Cross Tours and Explorations, Inc.*
Flagstaff Chamber of Commerce*
Fort Lee Company*
Four Corners Regional Commission
Fred Harvey Company
Georgie's Royal River Rats*
Grand Canyon Airlines
Grand Canyon Dories*
Grand Canyon Expeditions*
Grand Canyon Gas Company
Grand Canyon Scenic Rides
Grand Canyon Schools
Grand Canyon-Tusayan Chamber of Commerce
Grand Canyon Youth Expeditions, Inc.*
Harris Boat Trips
Hatch River Expeditions*
Hughes Air West
Kane County Record
Moki Mac River Expeditions*

Moqui Lodge
O.A.R.S., Inc.*
Outdoors Unlimited*
Recreation Equipment, Inc.
Red Feather Lodge
Sanderson River Expeditions*
Scenic Airlines, Inc.*
Tour West, Inc.*
Tri-State Flight Operations
Verkamps
Western River Expeditions, Inc.*
White Water River Expeditions*
Wilderness World*
Williams Chamber of Commerce Williams News
Wonderland Expeditions

C. PUBLIC COMMENT ON THE PLAN AND DRAFT ENVIRONMENTAL STATEMENT

The Draft Colorado River Management Plan and its accompanying draft environmental statement were released on January 8, 1978. In mid-February, six public meetings were held regarding the proposals, with one additional meeting held in Washington, D.C. in late March. The record for additional written or verbal input was held open until May 1, 1978.

In weighing public input, the primary consideration was the supporting rationale for the position taken by a person or group. It was very clearly stated at each of the public meetings that decisions would not be made on a vote count. However, the proportion of people either in favor of, or in opposition to, a particular proposal must be given some consideration along with their rationale. Much of the public input was a result of mass mailings and publicity and not based on actual review ~f the draft plan or DES.

Public interest in the Draft Colorado River Management Plan ran very high. Proposals in the plan were well publicized, both by environmental and recreational groups, mostly in favor of the plan, and commercial outfitters with motorized rafts, generally opposed to removal of motors. In all, 2,716 responses were received by the May 1 deadline. These included 215 persons who presented oral testimony at one or more of seven hearings held throughout the country and 2,442 persons who presented written comments. Additionally, 17 petitions were received with 739 signatures.

The proposal which elicited the most response was phasing out the use of motors on the Colorado River from Lees Ferry to Separation Canyon over a 3-year period.

Table 25 below summarizes the overall response to the question of motors and oars, by the combination of letters and testimony at public meetings,

letters alone, and testimony alone. The percentages in this table are reflective of only those who provided input on the question of motors and oars and not total input.

TABLE 25 SUMMARY OF MOTOR AND OAR INPUT

	% Respondents	# Respondents	Type Input
For non-motorized trips	56	1476	Letters/Testimony
For motorized trips	44	1181	Letters/Testimony
For non-motorized trips	57	1388	Letters
For motorized trips	43	1054	Letters
For non-motorized trips	41	88	Testimony
For motorized trips	59	127	Testimony
Other		59	Letters

There were 27 people who wrote in protest only of a motor ban below Diamond Creek because they wish to continue upriver runs from Lake Mead to Diamond Creek in motorized craft. There were 59 people who commented on other aspects of the plan but did not state a preference for motor or oar trips. This accounts for the total letter and testimony input of 2,716 including 1,476 for oars, 1,181 for motors, (27 of these were for motors below Diamond Creek), and 59 with no comment on this point. Table 26 indicates the number of times particular reasons were given for support of phasing out the use of motors. These figures do not have any relationship to the number of letters or testimony received. A particular letter or testimony may have mentioned only one, perhaps 3, or possibly all of the items listed.

TABLE 26 REASONS FOR SUPPORT OF OAR TRIPS

	Number of Times Commented On	Type Response
Motors/wilderness incompatible	426	Letters & Testimony
Ban motors, would improve resources	219	Letters & Testimony
Eliminate noxious fumes	119	Letters & Testimony
Canyon too commercialized	91	Letters & Testimony

Table 27 shows the primary reasons given by those who prefer to see motorized trips retained. Again these figures are the number of times a particular point was mentioned.

TABLE 27 REASONS FOR SUPPORT OF MOTOR TRIPS

	Number of Times Commented On	Type of Response
Oar trips too long	693	Letters/Testimony
Hiking too Strenuous	191	Letters/Testimony
Eliminate the old, Infirm	497	Letters/Testimony
Too expensive by Oars	371	Letters/Testimony
Motors Safer	360	
Motor trips provide wilderness experience	221	Letters/Testimony
Noise no problem	88	Letters/Testimony

There was general support expressed for total use as proposed, provided that resource impacts could be kept within acceptable limits. Table 28 gives a summary of comments on the total use proposal. Again a letter or testimony may have mentioned only one or possibly several of the items listed. Therefore, there is no correlation between the number of letters or testimony received and the number of times a particular issue may have been raised.

TABLE 28 TOTAL USE PROPOSAL RESPONSE

	Number of Times Commented On	Type of Response
General support of the proposal	1110	Letters/Testimony
Specific support of this issue	29	Letters/Testimony
Against increased use	39	Letters/Testimony
For decreased use	18	Letters/Testimony
For status quo	15	Letters/Testimony
For winter use	20	Letters/Testimony
Against winter use	28	Letters/Testimony
For longer summer season	20	Letters/Testimony
For per day launch decrease	13	Letters/Testimony
Against per day launch decrease	13	Letters/Testimony
Self scheduling com mercial trips (status quo)	14	Letters/Testimony
Give more days to small companies	8	Letters/Testimony

The proposed use allocation was generally supported by those who commented on it. Only about half of those who provided input commented on this issue. The majority of those commenting on the allocation issue that were in support of increased allocation for privates were either private river runners or generally interested persons. The majority of those for the present allocation system were commercial outfitters or previous passengers on motorized trips. Table 29 is a summary of the input on the allocation proposal. The 1110 people listed as generally supporting the proposed allocation system did not specifically mention allocation. They simply stated that they supported the entire plan. The number of comments on a particular point listed does not correspond directly with the number of letters received. A letter or testimony may have listed only one point or it may have listed more than one.

TABLE 29 ALLOCATION OF USE RESPONSE

	Number of Times Commented On	Type Response
General support of proposals	1110	Letters/Testimony
Specific support of allocation proposal	171	Letters/Testimony
For a lottery system	111	Letters Testimony
For a 50/50 split	64	Letters/Testimony
Continue status quo	65	Letters/Testimony

Overwhelming support was expressed for measures proposed to protect the canyon resources. Some specific comments opposed particular methods or procedures required and others suggested alternate ideas for protecting resources. Table 30 shows a summary of input on the protection of the canyon.

TABLE 30 RESPONSES TO RESOURCE PROTECTION PROPOSAL

	Number of Times Commented On	Type Response
General support of proposals	1110	Letters/Testimony
Specific for waste removal	133	Letters/Testimony
Against proposals waste	8	Letters/Testimony
Against fires being banned	19	Letters/Testimony
For proposed fire regulations	92	Letters/Testimony
For trail align ment	67	Letters/Testimony
Opposed to trail alignment	8	Letters/Testimony

Comments were also made about the adequacy of the plan and draft environmental statement. A few (32) questioned the combined trip study, saying that the sample size was too small, that people were preselected in that those favoring an exclusively motorized trip would not go, and that the motorized trip portion was crowded and rushed. The Parent economic study was also criticized by some people who said that the concessioners and local Northern Arizona Government units were not consulted and that the plan would be damaging to local economies. It

should be noted that some people mentioned these same studies as rationale for their support of the plan (the number of responses was not counted).

A few suggestions for changing the plan were also included in the responses. Some of the suggestions regarding allocation of commercial versus private trips are mentioned above. Several elaborate allocation schemes were proposed. Another suggestion was to include a motorless season. Several suggestions were made regarding waste disposal: the National Park Service should construct outhouses at frequently used sites and waste disposal sites should be located at the end of the trip. While not specifically related to this plan, several people commented on the burros in the canyon, stating that burros should be eliminated and one stating that some should be allowed to remain.

It is significant that only four people making comment on the proposed plan were opposed to wilderness designation for the Colorado River corridor through the Grand Canyon.

An additional study was contracted with Dr. Bo Shelby to gather information on the question of wilderness from people attending the several public meetings held in February and March on the draft River Management Plan and DES. Dr. Shelby devised a questionnaire to gather this additional information. The questionnaire was handed out to people attending the public meetings and they were requested to fill it out and return it to those in charge at the end of the meeting. Filling out the form was announced as being strictly voluntary.

The questionnaire asked people to think of Grand Canyon in three different ways: wilderness--a place generally unaffected by the presence of man; semi-wilderness--the kind of place where complete solitude is not expected; and undeveloped recreation area -- the kind of place where a natural setting is provided but meeting other people is part of the experience. Most people (54%) think that river trips currently provide a semi-wilderness experience (see Table 31). However, 60% feel that river trips should provide a wilderness experience. It appears that people who attended the meetings, like people on the river, generally endorse the goal of providing wilderness.

TABLE 31 RIVER EXPERIENCES IN GRAND CANYON
(ALL RESPONDENTS)

	Wilderness	Semi-wilderness	Undeveloped recreation
Which experience does a river trip provide now?	20% (80)	54% (215)	26% (103)
Which do you think a river trip should provide?	60% (243)	34% (136)	6% (23)
What are appropriate encounter levels in terms of:			
River encounters per day	1	3	5
Hours in sight of others while on river	.5	1.5	3
Number of stops (Out of 10) with encounters	1	3	5
Chances of meeting 10-30 people at places like Havasu	15%	30%	50%
Number of nights (out of 10) camped near others	0	2	4

While most people endorse the wilderness concept, there were different definitions of what wilderness consists of in terms of encounters per day, time in sight of others, meeting other people at attraction sites and number of nights camped near others. The lower part of Table 31 shows how people defined their experiences in terms of encounter levels. Wilderness was defined as: 1 or fewer river encounters per day, less than one-half hour in sight of others on the river, meeting other parties at no more than 1 out of 10 attraction sites, a 15 percent chance of meeting others at the most popular stops, and camping away from other parties virtually all of the time. Appropriate contact levels are considerably higher for semi-wilderness and undeveloped recreation.

Are people willing to "pay a price" for wilderness? Results presented in Table 32 suggest that they are. Of all those responding (left hand column), 56 percent say they would pay $100 more, 68 percent would wait a year longer to go on the trip, and 55 percent would take an off-season trip. Fifty-seven percent would rather do one of these things than settle for a "semi-wilderness" experience. Most private boaters, members of conservation groups and commercial oar passengers appear quite willing to pay more, wait longer, or take a winter trip in order to have a wilderness experience (see Table 32). Among these

TABLE 32
WILLING TO "PAY A PRICE" FOR WILDERNESS

If you prefer wilderness, would you be willing to do any of the following things in order to accomplish this? Percent willing to:	All Respondents (n=434)	Private boaters (n=163)	Conservation group members (n=143)	Commercial oar passengers (n=10)	Commercial motor passengers (n=82)	Commercial boatmen (n=63)
Pay $100 more for the trip.	56	57	66	80	46	46
Wait a year longer to go on the trip.	68	75	82	80	43	63
Go during winter season (Oct. thru March)	55	71	72	70	17	53
If you had to choose, would you rather:						
Do one of these things	57	73	72	80	34	46
Or						
Have a "semi-wilderness" experience.	43	27	28	20	66	54

groups, 70-80 percent would rather do one of these things than settle for a semi-wilderness experience. In contrast, a majority of commercial boatmen and two-thirds of commercial motor passengers would prefer a semi-wilderness experience rather than engage in such trade-offs. It appears that these two groups place less value on having a wilderness experience.

Several different interest groups were represented at the public meetings. Most groups feel river trips currently provide either semi-wilderness or undeveloped recreation (see Table 33). The only exception is commercial motor passengers, 45 percent of whom feel that trips offer a wilderness experience. A majority of all groups feel that river trips should provide a wilderness experience.

In summary, most respondents think the area should provide wilderness, most define the wilderness experience in terms of low numbers of encounters, and many are willing to "pay a price" for this experience. Data collected on the river (Shelby and Nielsen, 1976) suggest that the proposed 3 launches per day limit may result in contact rates higher than the wilderness norm outlined in the present report but this conclusion is unclear because the proposed limit will also change the distribution of use, and further monitoring will be necessary. In terms of interest groups, it appears that the wilderness norms of commercial motor passengers are different from those of other groups and that boatmen and motor passengers place less of a premium on wilderness.

TABLE 33
HOW DIFFERENT GROUPS FEEL ABOUT RIVER EXPERIENCES

	All Respondents (n=434)	Private boaters (n=163)	Conservation group members (n=143)	Commercial oar passengers (n=10)	Commercial motor passengers (n=82)	Commercial boatmen (n=63)
Which experience does a river trip provide now?						
Percent responding:						
Wilderness	20	16	16	0	45	20
Semi-wilderness	54	52	52	56	48	48
Undeveloped recreation	26	33	32	44	7	33
Which do you think a river trip should provide?						
Percent responding:						
Wilderness	60	75	70	60	51	53
Semi-wilderness	34	21	27	40	38	44
Undeveloped recreation	6	5	3	0	11	3

D. RESPONSE TO COMMENT ON THE DRAFT ENVIRONMENTAL STATEMENT

A total of 2,716 comments were received during the public review period. Of these, approximately 400 comments were specifically in response to the draft environmental statement. Some agencies, groups, and individuals submitted more than one letter and some letters were signed by more than one individual. All written comments were analyzed and 72 representative letters are printed as part of this environmental statement.

All agency letters received have been included, and those organization or individual letters that best represent a range of issues or offer substantive comment on the draft statement have been selected for formal response.

The comments and responses for each letter are numbered in consecutive order. To facilitate this referral system, the letters are organized by category and placed in alphabetical order within each category.

1. Comments Received from Federal Agencies

Advisory Council on Historic Preservation
Council on Environmental Quality
Department of Agriculture
- Forest Services (2)
- Soil Conservation Service

Department of the Interior
- Bureau of Indian Affairs (2)
- Bureau of Land Management
- Bureau of Outdoor Recreation (Heritage Conservation and Recreation Service)
- Bureau of Reclamation
- Fish and Wildlife Service
- Geological Survey

Department of Transportation
- Federal Aviation Administration
- U.S. Coast Guard

Environmental Protection Agency

X. REFERENCES

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APPENDIXES

A. Colorado River Research Program

B. Private Trip Affidavit

C. Health and Sanitation Guidelines

D. 1980 Operational Requirements

E. Breeding Birds of the Colorado River

F. Mammals of the Colorado River

APPENDIX A

COLORADO RIVER RESEARCH PROGRAM

Grand Canyon National Park

A series of research investigations relating to the natural resources the of Colorado River within Grand Canyon National Park and visitor recreation uses was initiated in 1973. These studies were conducted under contract with educational institutions and a professional research firm to provide scientific information to serve as the basis for a management plan for the Colorado River from Lees Ferry to Grand Wash Cliffs.

Final reports on all of these projects have been received by the National Park Service and have been professionally reviewed and analyzed. Basic findings and recommendations from each report will be consolidated into a synoptic report which the National Park Service managers responsible for the Colorado River will use in the implementation of the river management plan.

Each project is listed below with: the title of the project, the contract or purchase order number; the organization to which the contract was issued; the principal investigator, and the period covered by the study.

1. Ecology of the riparian zone of the Colorado River including (1) vegetation mapping, (2) interrelationships of visitors with plants and animals, (3) successional changes in plants as a result of Glen Canyon Dam, (4) population densities, home ranges and demography of important vertebrates, (5) impact of wild burros on beaches, (6) impact of burros on vegetation, (7) an inventory of insect species; CX821550007; Museum of Northern Arizona; Dr. Steve Carothers; FY 75 and 76.

2a. Sociological carrying capacity of the Grand Canyon-Colorado River area (commercial use); CX821040104; Human Ecology Research Services, Inc.; Drs. Eugene Haas, Joyce Nielsen, and Bo Shelby; FY 74 through FY 76.

2b. Sociological carrying capacity of the Grand Canyon-Colorado River area (private use); change order; Human Ecology Research Services, Inc.; Drs. Eugene Hass, Joyce Nielsen, and Bo Shelby; results incorporated into the final report of the commercial use; FY 75 - 76.

3. Grand Canyon National Park campsites inventory; CX000-3-0061; Penn. State University; Dr. F. Yates Borden; FY 75; Dr. Borden has completed a physical carrying capacity model.

4. Human waste disposal analysis (porta-potty) along the Colorado River; CX821060029; University of Arizona; Dr. Robert Phillips; FY 76.

5. Analysis of human waste disposal with special reference to public health and bacteriology; Dr. Bruce Knudsen and Grand Canyon National Park science staff; FY 75.

6. Sound level evaluations of motor noise from pontoon rafts in the Grand Canyon; CX000l-3-0061; Penn. State University; Don Thompson; FY 75.

7. History with bibliography of biological research in the Grand Canyon region with emphasis on the riparian zone; PX821040040; Museum of Northern Arizona; Dr. Steve Carothers; FY 74.

8. Riparian feasibility study; CX821050079; Museum of Northern Arizona; Dr. Steve Carothers; FY 74.

9. Number and distribution of burros in the Grand Canyon: PX821050830; Museum of Northern Arizona; Dr. Steve Carothers; FY 76.

10. Burro follow-up study; damage and recommendations for protection of the Grand Canyon ecosystem; PX821060722; Museum of Northern Arizona; Dr. Steve Carothers; FY 76.

11. Status survey of vertebrates and associated plants of the riparian area and Inner Gorge of the Grand Canyon, with emphasis on fishes; CX821060006; Tulane University; Dr. Royal Suttkus; FY 76.

12. Aquatic investigations on the Colorado River from Separation Canyon to the Grand Wash Cliffs; PX821060350; University of Nevada at Las Vegas; Dr. James Deacon; FY 76.

13. Survey of fish and their breeding status in the Colorado River; PX821060298; Dr. Royal Suttkus; FY 76.

14. Study of the status of fish in the Colorado River; collaborator; University of Michigan; Dr. Robert Miller; FY 76.

15. A preliminary survey of fishes of the Colorado River in the Grand Canyon (feasibility study); PX821050965; Dr. Royal D. Suttkus; FY 75.

16. Limnologic studies on the Colorado River in the gorge of the Grand Canyon, Grand Canyon National Park (feasibility study); PX821050862; Arizona State University, Dr. Gerald Cole; FY 75.

17. Continued studies on the limnology of the Colorado River in Grand Canyon National Park; PX821060263; Arizona State University; Dr. Gerald Cole; FY 76.

18. Periphyton microfloral analysis of the Colorado River-Lake Powell to Lake Mead; CX821060008; Northern Arizona University; Dr. Dean Blinn; FY76.

19. Analyses of periphyton and certain physico-chemical parameters from the Colorado River system between Lakes Powell and Mead (feasibility study); PX821050861; Northern Arizona University; Dr. Dean Blinn; FY 75.

20. Survey of phytoplankton, bacteria and trace chemistry of the lower Colorado River and tributaries in the Grand Canyon (feasibility study); PX821050863; Arizona State University; Dr. Milton Sommerfeld; FY 75.

21. Survey of bacteria, phytoplankton, and trace chemistry of the lower Colorado River and tributaries in the Grand Canyon; CX821060007; Arizona State University; Dr. Milton Sommerfeld; FY 76.

22. An annotated bibliography of limnologically related research on the Colorado River and its major tributaries in the region of Marble and Grand Canyons; PX821041350; Arizona State University; Dr. Gerald Cole;
FY-74.

23. An inventory of large and small bird bones from Stanton's Cave PX821050967; University of Arizona; Dr. Amadeo Rea; FY 75 - FY 76.

24. Camelthorn control; no contract; NPS-GRCA; Dr. Roy Johnson.

25. The establishment of bench marks and GCNP techniques for measuring erosion along the Colorado River; PX821060262; University of Virginia; Dr. Alan Howard; FY 76.

26. Changes in fluvial deposits of the Colorado River in the Grand Canyon; continuation of Washington-funded project CX821060009; University of Virginia; Drs. Alan Howard and Robert Dolan; FY 76.

27. Hydrology and sedimentology of the Colorado River; CX821060030; University of Arizona; Dr. Emmett Larsen; FY 76.

28. Analysis of backcountry trail use in Grand Canyon National Park; CX821060027; Museum of Northern Arizona; Dr. Steve Carothers; FY 76.

29. Economic analysis of river companies running the Colorado River in Grand Canyon National Park; CX821060028; Utah State University; Dr. Michael Parent; FY 76.

APPENDIX B

NONCOMMERCIAL RIVER TRIP AFFIDAVIT

Your signature on this affidavit indicates that you have considered the permit conditions and that your trip is organized in the spirit, as well as the intent, of the following conditions (36 CFR 5.3, Business Operations; 36 CFR 7.4(h) Grand Canyon National Park, Colorado Whitewater Trips). Failure to abide by these conditions will jeopardize future applications and will result in permit cancellation.

1. A private river trip must be participatory. Trip preparation (including logistics food purchase, equipment assembly, transportation and vehicle shuttle) and conduct of the trip (including food preparation and sanitation) must be shared by members of the group. Collecting a set fee (monetary compensation), payable to an individual, groups or organization, for conducting, leading, guiding or outfitting a private river trip is not allowed. The trip leader should delegate responsibility (financial and otherwise) for various aspects of trip preparation and conduct.

2. The purpose of the trip must be for its recreational and/or educational values. The trip will not be conducted for monetary gain (either as a direct or indirect result of the trip) or acquisition of new equipment to the advantage of an individual, groups or organization or for the purpose of amortizing equipment.

3. Media or direct mail or other advertising is not permissible.

4. Estimated overall trip cost:
_____(based on _____ trip members)

5. A complete itinerary including off-river days and a list of boatmen, their experience, equipment, and other information ensuring compliance with the Appendix A of the permit application criteria must be provided at least sixty (60) days prior to trip launch. A National Park Service form will be provided for this purpose.

I have given complete and accurate descriptions and answers to all questions. I agree to comply with all park rules and regulations as stated in Appendix A of this application, and appropriate parts of the Code of Federal Regulations, AND ASSUME FULL RESPONSIBILITY FOR THE CONDUCT OF MY ENTIRE PARTY IN OBEYING THESE RULES AND REGULATIONS. To the best of my knowledge, my name and those of the trip participants appear on only one application and I understand that duplication of names or incomplete answers will make my permit application invalid. also acknowledge that I have read and agree with all terms in the above noncommercial river trip affidavit.

It is unlawful to knowingly and willfully falsify or conceal by any scheme or by any false, fictitious or fraudulent statements or representations or to make use of any false writings or documents knowing them to contain any false, fictitious, or fraudulent statement or entry. Violators will be subject to a fine of not more than $10,000.00 or imprisonment for not more than five (5) years or both (18 U.S.C. 1001, 1970).

Applicant's Signature_____